REMARKS

Status of the Claims

Claims 1, 2, 5-12, and 14-19 are pending, with claim 1 being independent. Without conceding the propriety of the rejections, claims 1 and 14-19 have been amended. Support for the amendments can be found throughout the specification and claims. See, for example, page 19, lines 20-32 and page 20, lines 1-10 of the present specification.

More specifically, Applicants note that claim 1 has been amended to incorporate the limitations of cancelled claim 13. As claim 13 was dependent from claim 1, the present amendment does not introduce new matter. Similarly, it should be noted that claims 14-19 have been amended merely to change the dependency from claim 13 to claim 1. As such, Applicants respectfully submit that no new matter has been added by the present amendments.

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the foregoing amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, and 5-11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Merely in order to expedite prosecution, claim 1 has been amended to include the features of cancelled claim 13. As cancelled claim 13 has not been rejected as being unpatentable over Ackerman, Applicants respectfully request that the obviousness rejection of claims 1, 2, and 5-11 over Ackerman be withdrawn.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman") further in view of U.S. Patent No. 4,605,678 ("Brennan"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Merely in order to expedite prosecution, claim 1 has been amended to include the features of cancelled claim 13. Claim 12 depends from amended independent claim 1. As cancelled claim 13 has not been rejected as being unpatentable over Ackerman in view of

Brennan, Applicants respectfully request that the obviousness rejection of claims 12 over Ackerman in view of Brennan be withdrawn.

Claims 13, 14, 16, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman") further in view of U.S. Patent No. 2,852,546 ("Kolling"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Initially, it should be noted that claim 1 has been amended to incorporate the limitations of cancelled claim 13. However, as claim 13 was dependent from claim 1, the present amendment does not introduce new matter. Similarly, it should be noted that claims 14-19 have been merely amended to change the dependency from claim 13 to claim 1.

M.P.E.P. § 2142 provides that to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991), under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (*i.e.*, the reference teachings establish a prima facie case of obviousness) is more probable than not.

Amended independent claim 1 recites a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream, the method comprising: a) filtering a Fischer-Tropsch derived hydrocarbon stream with a ***conventional filter*** to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream; b) ***passing the filtered hydrocarbon stream to a first distillation step and a second distillation step***, the first distillation step producing a first overhead stream and a first bottoms stream, and the second distillation step producing a second overhead stream and a second bottoms stream, wherein ***the first and second distillation steps remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream***, wherein the contamination is substantially concentrated in the second

bottoms fraction; and c) ***recovering the bottoms fraction from the second distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.***

Ackerman relates to a novel process for treatment of a combination of gases, finely divided solids, and liquids using a wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns. (Col. 1, lines 19-22). Ackerman further discloses that in the process, a fractionator may be used as a means for separating the total product mixture into specified product streams. (Col. 9, lines -33).

Ackerman teaches that this novel process of using the wire filter element overcomes the limitations of known processes for removing catalysts or solids of fine sizes. (Col. 3, lines 26-28). Accordingly, the invention of Ackerman focuses specifically on this wire filter device. Ackerman discloses that the use of its wire filter element having filtering slits of *precise minute widths in the range of 0.5 to 100 microns* allows catalysts or solids of fine sizes to be retained while also achieving the filtering advantages of shaped wire filtering elements. (Col. 3, lines 27-39). Accordingly, Ackerman relates to using the specified wire filter element to remove catalysts or solids of fine sizes from the product stream. Applicants respectfully submit that Ackerman does not disclose or suggest that any further removal of catalysts or solids of fine sizes is needed.

In contrast to Ackerman, the presently claimed invention uses ***conventional filtering*** to remove contamination having an average size greater than or equal to about 1 micron and then uses two distillation steps to remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream. Applicants respectfully submit that a conventional filter is not the same as the claimed wire filter element having filtering slits of precise minute widths in the range of 0.5 to 100 microns of Ackerman.

Moreover, it should be noted that the presently recited ***conventional filter*** removes contamination having an average size ***greater than or equal to*** about 1 micron (as a typical conventional filter would) and then ***two distillation steps*** are used to remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream. Because the two distillation steps are being utilized to remove contamination present as soluble species or as ultra-fine particulate, not as a means of fractionating the product stream, the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

With regard to the two distillation steps for removal of contamination, the Examiner's attention is directed to the present specification wherein it is disclosed that the two-step distillation process substantially eliminates plugging of the hydroprocessing reactor thus extending the cycle time of the hydroprocessing catalyst to at least a two year duration. Additional advantages of the presently recited two-stop distillation process include a recovery of at least a 70 percent by volume of commercially viable product from the Fischer-Tropsch process. (Page 20, lines 11-16).

Ackerman does not disclose or suggest that contamination is present in the form of soluble species or in the form of ultra-fine particulates after use of the wire filter element. Moreover, Ackerman does not disclose or suggest a two-step distillation process to remove contamination present as soluble species or as ultra-fine particulate. Ackerman merely discloses using a fractionator as a *means of separating product streams*. Because Ackerman is utilizing the fractionator as a means of separating product streams, Ackerman does not disclose or suggest that the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream.

Kolling has been cited in the Office Action dated 18 October 2006 as disclosing a two stage distillation process. (Office Action, Page 4). Kolling relates to the conversion of hard paraffin obtained by the catalytic hydrogenation of carbon monoxide into paraffins having melting points between 40 and 80°C. (Col. 1, lines 16-19). Kolling discloses that hydrocarbons boiling up to about 340°C are distilled off in a first distillation zone in a distilling column operated under about atmospheric pressure. (Col. 2, lines 24-28). After distilling off the hydrocarbons boiling up to about 340°C, the distillation residue from the first distillation zone is distilled under reduced pressure in a second distillation zone. (Col. 2, lines 28-32). The fraction of the material boiling between about 340 to 550°C is distilled off in the second distillation zone, while the fraction boiling above about 550°C is retained as distillation residue. (Col. 2, lines 32-35). The paraffins having a melting point between about 40 and 80°C are recovered from the distillate from the second distillation zone. (Col. 2, lines 38-40).

Accordingly, as disclosed in the present specification, Kolling describes an atmospheric distillation followed by a vacuum distillation of a Fischer-Tropsch wax to separate paraffins with melting points between 40 and 80°C. (page 16, line 31 – page 17, line 2). As such, Kolling discloses an atmospheric distillation followed by a vacuum distillation

as a ***separation technique to provide desired Fischer-Tropsch products***, not to remove contamination. Moreover, the atmospheric distillation followed by a vacuum distillation technique of Kolling does not in any way suggest removing ***contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream***.

The Examiner's attention is directed to pages 16-17 of the present specification wherein it is disclosed that the prior art, including Kolling, does not teach or disclose the need for methods of contamination removal from a Fischer-Tropsch derived hydrocarbon stream by distillation such that the contamination is concentrated into a particular fraction for isolation from the hydrocarbon stream. (page 16, line 26 – page 17, line 8). Furthermore, the prior art, including Kolling, does not disclose or suggest recovering a bottoms fraction designed to concentrate and isolate particulate contamination. As such, the prior art, including Kolling, does not disclose or suggest recovering a bottoms fraction containing the isolated contamination from a distillation process, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream, as presently claimed. Applicants respectfully submit that, as explained in the specification, the bottoms fraction designed to isolate and concentrate the contamination is as small as possible to maximize the commercially viable product. (page 17, lines 9-16).

Therefore, Applicants respectfully submit that even if there were some suggestion or motivation to combine Ackerman and Kolling and a reasonable expectation of success, even if combined Ackerman and Kolling do not disclose or suggest all of the claim limitations of the presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream.

Applicants respectfully submit that Ackerman and Kolling fail to disclose or suggest filtering a Fischer-Tropsch derived hydrocarbon stream with a ***conventional filter*** to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream. Applicants further respectfully submit that Ackerman and Kolling fail to disclose or suggest ***passing the filtered hydrocarbon stream to a first distillation step and a second distillation step***, the first distillation step producing a first overhead stream and a first bottoms stream, and the second distillation step producing a second overhead stream and a second bottoms stream, wherein ***the first and second distillation steps remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream***, wherein the contamination is substantially

concentrated in the second bottoms fraction. Moreover, Applicants respectfully submit that Ackerman and Kolling fail to disclose or suggest ***recovering the bottoms fraction from the second distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream***.

As such, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection over Ackerman in view of Kolling be withdrawn.

Claims 15 and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,527,473 ("Ackerman") further in view of U.S. Patent No. 2,852,546 ("Kolling") and further in view of U.S. Patent No. 4,605,678 ("Brennan"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Claim 15 further limits claim 1 by reciting that the first overhead stream is passed to the hydroprocessing reactor, and the first bottoms stream is passed to the second distillation step and claim 17 further limits claim 1 by reciting that the second overhead stream is passed to the hydroprocessing reactor.

As described above, Ackerman relates to a novel process for treatment of a combination of gases, finely divided solids, and liquids using a wire filter element with mechanically controlled filter slits of precise minute openings of between 0.5 to 100 microns.

Kolling discloses a process for converting hard paraffins into paraffins preferably melting between about 40 and 80°C. (Col. 2, lines 7-9). As disclosed in the present specification, Kolling describes an atmospheric distillation followed by a vacuum distillation of a Fischer-Tropsch wax to separate paraffins with melting points between 40 and 80°C. (page 16, line 31 – page 17, line 2). Accordingly, Kolling discloses an atmospheric distillation followed by a vacuum distillation as a ***separation technique to provide desired Fischer-Tropsch products***, not to remove contamination.

Brennan discloses a process for removing catalyst fines from the wax product produced in a slurry Fischer-Tropsch reactor comprising removing the wax product from the reactor and separating catalyst fines from the product by passing the wax product through a high gradient magnetic field. Brennan is cited as disclosing that the product may be further upgraded by hydrotreating.

As described above in detail, Applicants respectfully submit that Ackerman and Kolling fail to disclose or suggest filtering a Fischer-Tropsch derived hydrocarbon stream with a ***conventional filter*** to remove contamination having an average size greater than or equal to about 1 micron to produce a filtered hydrocarbon stream. Applicants further respectfully submit that Ackerman and Kolling fail to disclose or suggest ***passing the filtered hydrocarbon stream to a first distillation step and a second distillation step***, the first distillation step producing a first overhead stream and a first bottoms stream, and the second distillation step producing a second overhead stream and a second bottoms stream, wherein ***the first and second distillation steps remove contamination present as soluble species or as ultra-fine particulate from the filtered hydrocarbon stream***, wherein the contamination is substantially concentrated in the second bottoms fraction. Moreover, Applicants respectfully submit that Ackerman and Kolling fail to disclose or suggest ***recovering the bottoms fraction from the second distillation step, wherein the amount of the bottoms fraction is less than about 35 percent by volume of the filtered hydrocarbon stream***.

As noted above, Brennan is cited merely as disclosing that the product may be further upgraded by hydrotreating. Accordingly, as cited, Brennan fails to cure the many above-noted deficiencies with respect to Ackerman and Kolling. Moreover, since Kolling discloses an atmospheric distillation followed by a vacuum distillation as a separation technique to provide desired Fischer-Tropsch products, Applicants respectfully assert that the product stream would be upgraded as disclosed in Brennan prior to the distillation process of Kolling to provide the desired separate product streams.

As such, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claims 15 and 17 be withdrawn.

Conclusion

For the reasons noted above, the art of record does not disclose or suggest the present claims.

In view of the foregoing amendments and remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. In the event that there are any questions relating to this application, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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